REMARKS

In the January 26, 2005 Office Action, the Examiner noted that claims 1-47 were pending in the application and were rejected under 35 USC § 103. In rejecting the claims, U.S. Patents 6,112,208 to Ikegami; 6,349,372 to Benveniste; 6,438,556 to Malik et al.; 5,951,623 to Reynar et al. (References A-C and E, respectively, in the May 22, 2003 Office Action); and 6,078,923 to Burrows (Reference A in the December 22, 2003 Office Action) were cited. Claims 1-47 remain in the case. The Examiner's rejections are traversed below.

The Application & Technical Background

All of the independent claims have been amended to add that sections of the data are compressed "based on a conversion table" (e.g., claim 7, line 3) which is created "for each section selecting a predetermined number of 16-bit codes within the data in an order of appearing frequency, decomposing remaining non-selected 16-bit codes into 8-bit codes, and selecting the 8-bit codes in an order of appearing frequency" (e.g., claim 1, lines 6-9). This enables the methods, apparatuses, etc., recited in the claims to use Huffman compression of l6-bit codes capable of representing over 64,000 kinds of binary data, such as characters (in languages like Japanese) or individual letters or sequences of letters (which may or may not be words in the case of languages like English) without requiring the overhead of 16-bit Huffman compression. The conversion table recited in the claims is described in paragraph [0055] on page 18 of the Substitute Specification and the method of creating the conversion table is described on pages 13-19. The benefits of higher data compression using a simple structure and low overhead are described on pages 6-9 of the Substitute Specification.

Submitted with this Amendment is an Information Disclosure Statement (IDS) providing a 25 page document in Japanese describing Huffman compression which utilizes drawings that may convey an understanding of the principles involved to someone who cannot read Japanese. If the Examiner would like to receive text in English providing the same general background of the principles involved, the Examiner may contact the undersigned by telephone and an effort will be made to locate an appropriate text.

The document provided via the IDS submitted herewith indicates that one of ordinary skill in the art understands that in 8-bit Huffman compression, there are 256 kinds of characters and control codes and thus, 256 kinds of leaves of the Huffman tree, and the compression parameters for generating the Huffman tree are the "appearing frequencies" of the 256 leaves. In a known Huffman compression method, the appearing frequency of each character is tabulated and a character having a high appearing frequency is assigned a small number of bits to

represent the character. If 16-bit Huffman codes are used, it is expected that compression efficiency will be higher, but the size of the compression table will be significantly larger, since there will be over 64,000 entries in the table which will require more storage capacity than typically available on personal computer at the time the application was filed.

The present invention obtains the benefit of using 16-bit Huffman codes instead of 8-bit Huffman codes, without the overhead of a 16-bit compression table by creating the compression table as recited on lines 6-9 of claim 1. In the embodiment described with reference to Figs. 3A, 3B, 4 and 5, after characters in a section have been sorted by "appearing frequency," 1024 kinds of 16-bit codes are selected in step S16 (see paragraph [0042]). Characters having lower appearing frequencies are decomposed into 8-bit codes as indicated in step S55 of Fig. 5 and described in paragraph [0050]. The resulting compression table represents a Huffman tree having 1280 codes (1024 + 256) which can be easily processed by a personal computer of the capacity available at the time the application was filed.

Rejections under 35 USC § 103

In item 3 on pages 3-21 of the Office Action, claims 1, 4, 6, 7, 10, 12, 13, 16, 18, 19, 22, 24, 25, 28, 30-32, 35, 37-40 and 45-47 (not 57 as indicated in the Office Action) were rejected under 35 USC § 103(a) as unpatentable over Burrows in view of Malik et al. and in items 4-6 on pages 21-28 the remaining claims were rejected by adding one of Reynar et al.; Benveniste; and Ikegami to the combination of Burrows and Malik et al. The wording of the rejections in items 4-6 were unchanged and the wording of the rejection in item 3 was substantially the same as the rejections in the May 21, 2004 Office Action, except for the additional description of teachings in Malik et al. on the last seven lines of page 5 and first six lines of page 6, and the added reasons for combining Burrows and Malik et al. at page 6, lines 9-10 and 12-13 and page 8, lines 13-14. These same sentences and phrases were also added at page 9, lines 5-17 and 20-21; page 10, lines 1-2; page 11, lines 14-15; the last ten lines of page 12 and first three lines of page 13; page 17, lines 1-2; and page 18, lines 1-13. In addition, the paragraphs at page 13, lines 4-10 and page 18, lines 15-20 were reworded.

In rejecting claims 1, 7 and 13, the following portions of Burrows, Fig. 2; column 3, lines 64; column 4, lines 30-37; and column 12, lines 20-25, were cited as disclosing "dividing both data and index data into a plurality of sections" (e.g., claim 1, line 2). Nothing has been found at any of the cited portions of Burrows of dividing data into sections as recited in the quotation from claim 1 in the preceding sentence. The cited portion of column 3 only refers to "parsing the pages ... [and] indexing the parsed pages," while column 4, starting with the cited portion

thereof, describes breaking "portions of information of the pages 200 into fundamental indexable elements or atomic pairs 400 ,,, , [where] each pair 400 comprises a word and its location" (column 4, lines 37-40). The cited portion of column 12 describes what is done with "compressed entries (words and locations)" (column 12, line 21) and thus, is irrelevant to operations that are performed prior to compression. Nothing has been found in Fig. 2 suggesting dividing data into sections.

The dividing operation recited in claims 1, 7 and 13 is an essential operation to compression that has all of the efficiencies provided by the present invention, e.g., small code size and a relatively small compression table. Since the cited portions of Burrows do not teach the dividing operation recited in claims 1, 7 and 13, it is impossible to obtain all the benefits of the present invention. The remaining independent claims, 19, 25, 32, 39, 40 and 47, all recite accessing a compressed file formed from "an original file ... divided into a plurality of sections and compressed for each section based on a conversion table" (e.g., claim 25, lines 3-4) or from an original file compressed in accordance with similar language. Thus, all of the claims patentably distinguish over the prior art due to the failure of Burrows to disclose the dividing operation recited in claims 1, 7, and 13.

Even if a prior art reference could be found disclosing dividing an original file into sections, so that "compressing each of the sections [can be] based on the conversion table created therefor" (e.g., claim 1, line 10) in the manner discussed previously, nothing cited in any of the Office Actions or found by the Applicants in either Burrows or Malik et al. teaches or suggests the use of a conversion table created as recited in, e.g., lines 6-9 of claim 1. Furthermore, nothing was cited or has been found in Malik et al., Reynar et al., Benveniste, or Ikegami suggesting modification of Burrows to divide a file into sections, create a compression table for each of the section in the manner now recited in the independent claims and then use the conversion table to compress each section. Therefore, it is submitted that all of the claims patentably distinguish over the applied art for at the least reasons discussed above.

Summary

It is submitted that the references cited by the Examiner, taken individually or in combination, do not reach or suggest the features of the present claimed invention. Thus, it is submitted that claims 1-47 are in a condition suitable for allowance. Entry of the Amendment, reconsideration of the claims and an early Notice of Allowance are earnestly solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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